DOCUMENT RESUME

ED 175 082 EA 011 775

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TITLE Theoretical Foundations for Design and Management of Human Service Organizations.
INSTITUTION Haifa Univ., Mount Carmel (Israel). Center for Educational Administration.
PUB DATE 78
NOTE 31p.; Not available in paper copy due to light print of original document
JOURNAL CIT Studies in Educational Administration and Organization; n7-8 p65-74 Sum 1978

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Communication (Thought Transfer); Decision Making; Hospitals; *Human Services; *Management; Models; Organization; Organizational Theories; *Organizations (Groups); Power Structure; Public Schools; Research Needs; Technology

ABSTRACT

This paper outlines a paradigm for relating research and theory in the study of organizations and organizational behavior. The paradigm is directly related to problems in the design and management of human service organizations, and it directs the scholarship of the field to the structure and control of agencies such as schools and hospitals. By centering attention on the use of information for control purposes, and on the decision-making behavior necessary to attain organization goals, the paradigm enables researchers and practitioners to assess principles of organization of potential value in design and management activities. An attempt is made to trace the objective impact of technology and organization structure on goal attainment and management control. Although this paradigm is quite general and the review of relevant contributions necessarily brief, it is possible to identify certain research priorities of immediate concern and to suggest methodological directions of potential value to those who design and control human service organizations. (Author)

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THEORETICAL FOUNDATIONS FOR DESIGN AND MANAGEMENT OF HUMAN SERVICE ORGANIZATIONS

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Theoretical Foundations for Design and Management of Human Service Organizations

A recurring problem in all complex organizations has to do with the administrative control over technological processes. This problem, when set in theoretical perspective, does not turn on whether administrators have or do not have a normative control. Indeed, as Parsons has pointed out in his analysis of hierarchical structures in formal organization, the integrative function of management requires it to make those allocative and coordinative decisions which both serve and control the technical subsystem.[1] Rather, the problem is one of resolving conflicts among types of authority in the organization while directing technical processes toward organization goals. The seriousness of this problem is intensified by several developments in the evolution of modern organizations. These are:

1) Rapid technical changes in all fields of endeavor, with an attending role differentiation and specialization which has shifted technological decision-making and development activities closer to the actual production or service levels in organizations.[2]

2) An increasing erosion of management decision prerogatives by bodies of administrative and case law and employment contracts.[3]

3) Lack of responsiveness in bureaucratic models of organization to changing technologies and constituent demands.[4]

4) Tensions between the individual and the organization, having to do with conflicts over personal autonomy and work identification, coupled with skepticism about the links between organization position and social status.[5]

In human service organizations, these developments are manifest in an ongoing tension between management and professional employees; a tension which is heightened by the complexity of the required technologies to deliver services to clients. As Corwin states:

> . . . this presumed tension between professional and bureaucratic principles of organization will vary systematically with different types of organization. Two variables are especially important; the complexity of the organization, and the degree of technical specialization that employees have achieved. Specialization gives employees power; the more specialized they are, the less competent are administrators and laymen to supervise and evaluate them. On the other hand, the more complex the organization, the greater the need for internal coordination which enhances the power of administrators whose primary internal function is coordination. Lay control is challenged simultaneously by the development of both conditions; and, at the same time, the concurrent development of specialization and complexity has fertilized the soil for conflict between administrators and professional employees.[6]

Corwin here has pinpointed the dilemma which confronts human service organizations. Insofar as any complex social system has a need of both normative and rational order to set and pursue goals, it cannot discard entirely "bureaucratic principles of organization" and the resulting hierarchies of authority and prestige. However, in order to satisfy the many demands for service, these organizations are continually in search of more highly refined technologies which are often developed by the organizations themselves through the research efforts of professional employees. In environments where resources are in short supply, these conflicting pressures

may be increased as organizations are asked to manage more carefully in order to accomplish more with less funds.

Paradigms and Organization Design

The advancement of knowledge in any applied field depends heavily on shared concepts and methods of investigation among scholars and practitioners. These are the tools of thought that help to bridge the gap between theory and design. Guetzkow thinks of this problem as "conversion barriers in using the social sciences."[7] However, even shared ideas and research practices are of little long-term benefit without the broader general theories which serve to integrate the work of many individuals into an explanatory system which not only predicts the consequences of certain events, but also helps to identify the points where further work needs to be done to advance knowledge about the phenomena under investigation. As Blalock notes:

> The principal value of a highly general theoretical formulation is that it enables one to place the various special cases in perspective and to prove general theorems appropriate to them all. I rather suspect that the most usual manner in which these general theories are developed is somewhat as follows. There may be several special cases or more restrictive theories in the literature for a rather long period of time. Then it may be noticed that these theories or models contain a number of similarities, and attempts may be made to synthesize or generalize them. Once a general formulation has been developed, a number of additional special cases will be noted, including so-called "degenerate" or unusual ones. The resulting "paradigm," as Kuhn refers to it, may serve as a major stimulus to investigators to fill in the details and solve the remaining puzzles that have not been resolved by the theory.[8]

In a search for a paradigm to assist in the design of human service organizations, we are probably not yet at the stage of maturity suggested in Blalock's statement. Instead of a well-grounded, predictive paradigm, we have only sets of discrete findings regarding organization structure

and behavior. These need to be set in order so that one can identify the necessary links which have to be taken into account as ideas are applied to organization design and management.

A workable paradigm for organization design ought to attain at least the following objectives:

1) identify the major works in organization research and design,

2) indicate gaps and the specific research questions which ought to be addressed,

3) provide an over-all conception of relationships among basic organization components: subsystems of organization,

4) suggest methods for using information in design and management problem analysis.

It is clear from current design efforts that the cataloguing of information about organizations is a major need of those who have to control or arrange rapidly changing technologies.[9] It is also apparent that there are significant omissions in the literature which ought to be first priority research problems for students of organization. The accelerated demand for human services provides endless opportunities for design specialists and seemingly limitless problems for management; conditions which might be better ordered by the development of comprehensive paradigms of organization.

Organization, Technology, and Control

When we speak of an organization as a social system, we are of course drawing attention to the fact that there is an aggregation of human and technical contributions which constitute the potential of the system to attain goals its environment demands of it. As Barnard put it, "All complex formal organizations grow from and consist of unit organizations . . . ."[10] Actors in roles who perform simple organization tasks, such as accounting, component assembly, or take patient histories are building blocks from

which organization designers form the large-scale organizations of modern society. The central feature of this view of organizations is the notion that complex social systems can be synthesized from smaller socio-technical units and that they can be controlled in what they do so that some over-all objectives can be attained.[11] Most popular views of organization since Barnard, as here expressed by Emery, seem to agree:

> Organizations, like all systems, have a hierarchical structure that results from factoring global objectives into a hierarchy of more manageable subobjectives. What we view as organizational structure -- the compartmentalization of the organization's resources, and the responsibility for achieving assigned objectives -- represents an effort to implement the results of the factoring process.[12]

Emery's statement embodies the issues one has to confront in moving from consideration of the elementary technical processes in an organization to the problems associated with aggregating technical and human contributions toward attainment of organizational goals. Somehow, the resources of the organization have to be allocated to the various activities required in order to reach those goals. People have to be assigned tasks and motivated to do them, and controls have to be placed on a wide range of individual and group activity if resources and personnel are to be used efficiently. Solutions to these problems take shape in choices of certain combinations of technical components and in management's use of information about individual and group performance in the making of allocative and control decisions.

How these problems are attacked in manufacturing organizations is easy to observe. Any complex product is the result of many sub-operations which, in the final assembly, appear as components. Each of these operations is

capable of standing alone as a coherent, controllable activity. In very large organizations, or in the production of extremely complex products, these sub-operations can themselves become organizations further fractionated into components with attending specialization in the division of labor. Here are principles of resource allocation and control in operation as management attempts to arrive at a finished product under some least-cost criterion.

It is not so easy to see how this same process applies to human service organizations. Is a school or hospital an aggregate of technical and human components? Does it produce some final product which is a controlled combination of discrete contributions from several organizational components? Can it be centrally controlled to attain specific goals? The answers to these questions is, in each case, a qualified "yes." Technical means at the disposal of a human service organization are applied by individuals with specialized technical training to bring about desired changes in clients. These special skills are aggregated to produce some critical service to those who are being aided by the organization. The fact that management control over the technical contributions of human service specialists is less than that wielded by factory managers does not mean that human service organizations are uncontrollable. Rather, uncertainties of the "human" technologies, and the resistance of trained professionals to management control, sets roadblocks to centralized administrative control. Consequently, human service organizations are managed by <u>coordination</u> of the activities of several components, or units, arranged in a hierarchy of responsibility and authority.

Because the work of human service organizations generally involves the close cooperation of several professional specialties, coordination involves

the programming and monitoring of interactions among the technical activities of specialties. As Mesarović notes:

> The problem of coordination is then primarily involved with resolving the infimal [subordinate] unit interactions.[13]

This statement implies that a primary concern for management and organization design is the specification of rules and procedures for exchanges among lower level "infimal" units in the organization hierarchy. School administrators specify the rules governing the movement of students through curricula or a series of grade levels. Hospital administrators devise schedules for the use of diagnostic and treatment equipment and personnel. In neither case, does management control precisely the activities of technical specialists; there is instead a managed interaction among such units.

The distinguishing characteristic of this view of organizations is the recognition that each participant in technical units is a decision maker and can, in the extreme, be only moderately controlled by persons at higher levels in the hierarchy. Parsons, in a like analytical vein, has provided theoretical insight to this problem in the following:

> The theory of "bureaucracy" has been so strongly influenced by the conception of "line" authority that there has been a tendency to neglect the importance of what in some sense are qualitative breaks in the continuity of the line structure.[14]

At best, the professional is constrained in behavior through some form of bargained objectives which are enforced by a coalition of fellow workers.[15] Decisons made by any one component have a close relationship to those made elsewhere in the organization. The flow of materials and clients through the organization insures a minimum level of exchange and interdependence among units and, concomitantly, an interdependence of decisions. Thus, an individual is constrained not so much by the direct intervention of management in technical decision making, as by pressures of work at hand and the

decisions made by others within the technical subsystem. Nevertheless, to the degree that management is capable of setting some general constraints on workflow and communication among organization units, there is a potential for central control of operations. As Thompson views it, technology determines the degree of interdependence within organizations.[16]

Units involved in serial production, or assembly tasks, are generally physically aggregated into the same work space and the flow of product through production steps determines the degree of autonomy any one individual, or unit, will be able to exercise in decision making. As serial dependency becomes less evident -- as in education or medicine -- there is less need for close physical proximity of technical units and a corresponding increase in the degree of decision-making autonomy. In sum, technology requires certain classes of decisions which have to be made in order for the human service organization to continue its work. It may also specify the content of those decisions, the rules for arriving at solutions, and the range of roles and social interactions open to organization members and clients.[17]

Dynamics of "Human Technologies"

The technologies of human service involve the processing of clients. Some experience is accorded the recipient of service and the result is monitored for effectiveness and permanence. If we think of the client as passing through some sort of treatment which requires a mixture of organization resources, the result of which is to alter a given condition, one can picture, as in Figure I, the basic operating unit of typical human service organizations as a two-state process.

FIGURE I HERE

The technical capability of the organization is summarized by the "Treatment Parameter" in the diagram. This indicates the potential flow of individuals into the "Treated Population". If this were a school, the "Treatment Parameter" would correspond to the rate at which a given body of skills could be taught students and the "Treated Population" would constitute a state of skills mastery. In most of the human services, the "treatment" is not permanent once applied. Skills and knowledge can be forgotten, health can be lost and the objectives of welfare can be transitory. This means that the flow of individuals between "treatment" and "treated" can move in either direction so that demands on treatment services can be the product not only of newly assigned individuals, but also of repeated demands arising from previously served clients.

Control in these systems has the basic objective of transferring a specified number of clients into the "treated" state. In schools, certain numbers of students are to master specific materials. In hospitals, certain groups of persons are to be improved in health. The treatment efforts of the organization are applied in a manner corresponding to the discrepancy between the desired objective of treatment and the current level of persons "treated." That is, staff members in charge of a unit of this type continually monitor the number of persons "treated" and compare that number with the desired goal. If this number falls short, an adjustment is made in the entry rate; the "Adjustment Time" parameter in Figure I indicates that such adjustments are rarely "one shot" in nature, but are apportioned over time to smooth the impact of new clients on the system.

Finally, it is characteristic of these systems that the "treatment" can be overloaded. This results in a reversal of the entry flow; a reversal which

might also be signalled by too large a number of persons attaining the "treated" state so that an inferior quality of treatment is indicated. Thus, the organizational delivery mechanism of human services can be conceptualized at the fundamental level by a two-state process which flows in either direction; flows which are partly under the control of technical personnel. In this context, what are the control potentials, given certain system goals, and what is the theoretical reference point for designers of such systems?

By applying this general schema to specific human service organizations, we find that the delivery system is controllable and that it generates quite similar behavior patterns across a wide variety of human services.[18] Simulation studies of these systems indicate that goal attainment is possible, given management control over certain system parameters. In Figure II, a typical simulation result is depicted; a stable operating unit is given a new "treated" goal. Over time, the system adjusts to this requirement and a new level of operation is reached after some oscillation.

FIGURE II HERE

In this simulation, the system originally is operating at an equilibrium level. The solid or "goal" curve is coincident with the dotted curve representing observed system operation. Then, midway along the time axis, a goal input is introduced to the system. The result is an adjustment in the entry rate of clients to treatment and an increased level of operation of the system. After a delay, equal to the average time required for treatment, we begin to observe an increase in the number of "treated" persons. This number increases to match the new goal, but exceeds, or overshoots, because too large an entry rate has been employed. This overshooting of the goals results

in system adjustments which have the effect of removing those from the "treated" population directly, or by allowing natural attrition to run its course. That adjustment, however, also fails to halt the "treated" population at the desired level and diminishes it below the goal. This, in turn, triggers the control entry of new clients and, over time, the number of individuals in the "treated" population approaches the goal level ever more closely. The diminishing of these cycles is brought about by a value of the adjustment time chosen by system managers and it can be altered to produce a smooth approach to the goal input with a minimum amount of over- or under- shoot.

The similarity of these simple human service systems to classical examples in control theory has led a number of writers to conclude that mechanical and electrical control design principles can be applied to the management problems of industries, schools, and hospitals.[19] However attractive this approach might seem, the underlying principles of mechanical systems are far better known and more well-ordered than are the social sciences of human organization.[20] Thus, while simulation methods are quite appropriate for the study of the technologies of human service, it is necessary to look for theoretical foundations which are more comprehensive than control theory. What this implies is that human services can be controlled, at least in their most general form, but that the objective control responses, no matter how similar to classic circuit behavior, have their roots in theories of human behavior and not in physics.

These are socio-technical systems, as we have noted earlier, hence our theoretical base has to encompass the human behavior of clients and staff members -- the idiographic -- as well as the objective functioning of technical processes. It is fruitful to think of the socio-technical system

as a linked set of at least three subsystems: the technical process, the client system, and the technical staff. The schematic shown in Figure III suggests this partitioning of the human service organization.

FIGURE III HERE

Although this schematic is not overly detailed, it suggests the subsystems and linkages a designer has to take into account in building human service organizations. The objective behavior of each subsystem, as a part of the whole, can be analysed through simulation and related to general theories of system behavior.[21] In this way, a scenario can be build which details the necessary conditions for implementing selected technologies of health care, instruction, and other human services. Along with the study of human technologies, design also has to be concerned with the social consequences of technology for both clients and staff. The implications of technology for the behavior of those involved intimately with it, as controllers or as recipients of its benefits, can be analyzed by first studying the objective impact of behavioral requirements on the social systems of clients and staff.[22]

Information and Decision Making

When attention is turned to the problem of designing organizational arrangements for the control of technical subsystems, one immediately confronts questions related to decision making and to the collection and use of information for control purposes. Administrative decision-making is the behavioral link between technical processes and larger goals of organization. It, in turn, is tied to technical activities through information flows which not only carry the commands of authority, but also supply administrative decision-makers with projections of the workings of the technical subsystem. These aspects of organization can be added to the simple schema

of Figure III to suggest the complexities associated with hierarchical decision authority.

FIGURE IV HERE

The behavior of an administrative decision-maker is based on a continually revised model of the socio-technical system the actor is attempting to control.[23] This model may be highly structured, and empirically testable, as in operations research applications to industrial technology control problems.[24] It might be a good deal more fluid and indeterminate in transitional systems where basic technical processes have random components, or where their construction is unknown to the decision maker. Whatever the structure of the model, it serves as a basic reference point for the decision maker and it is continually revised to reflect fresh insight into the technical system arising from observations of system responses to decisions and policies.

The decision model is related to the behavior of the decision maker through a problem structure. This has the general form of the following matrix.

FIGURE V HERE

What the model of the controlled system -- socio-technical system in this stage of our discussion -- does is assist the decision maker in determining which of the states (S_n) the system is in, as well as the functional links between these states and the decision outcomes (O_{mn}). Given this information, the decision maker then can select one of the actions (A_m) according to a preference order over the possible outcomes.[25]

In our human service organization example, the model which is used by the decision maker is similar to the simulation model of client flow that was presented earlier. The model portrays variations in the technical subsystem that have to be controlled in order that treatment goals can be reached. With accurate estimates of the model parameters in hand, a decision maker then can take those actions most likely to produce wanted outcomes.

The need of information in such a process is quite clear. Information is collected about system performance to estimate parameters in the decision model and, over time, to revise the structure of the model. The relevant question for system design and management has to do with the relationship between the cost of such information and the contributions it makes to removing the uncertainty of the decision maker.[26] The theoretical base for this question is the economic theory of information, where values can be assigned to uncertainties and the result linked to the decision-making behavior of managers.[27]

Information has still another instrumental value in the control of technical processes. The control attempts, or commands issued, by a decision making authority have to be communicated to the controlled system. The channels whereby this is accomplished are subject to errors and to certain idiographic influences which have to be taken into account in order to predict the objective consequences of control efforts.[28] By centering attention on information flows, the designer addresses these social issues as well as the calculable requirements of information use by the decision maker.

Building Complex Systems of Organization

Simple socio-technical modules, such as those discussed earlier, can be arranged in various ways to provide highly sophisticated services to clients. These aggregations produce the multi-level hierarchies of Parsons, Barnard,

and others associated with the concept of formal organization. There are, of course, many potentially useful configurations which can be made of simple service modules and which lead to organizational behavior of increased richness and variability. To illustrate a synthesis of such organizations, as well as the problems of managerial coordination of complex systems, it is useful to consider what might be called a first-order of complexity by linking two service modules of the type shown earlier in Figure I.

Suppose that we have linked two such modules in serial order, as in Figure VI. The implication is that the services provided have to be sequenced and clients have to complete "Treat I" before being accepted into "Treat II". As in our first example, each of the treatment modules attempts to arrive at some professionally defined goal. The higher levels of the organization attempt to coordinate the work of these modules and balance client loads across treatments in order to attain over-all organization goals. In most human service organizations, coordination of the work of such technical units takes place by one of three procedures: 1) resources are allocated to alter the rate of flow of clients through the units, 2) communications among the units are channelled to stimulate more effective decision making within each unit, 3) goals of individual units may be shaped to conform to the organizations's objectives. The general structure which arises to deal with the problems of coordination is often quite similar to that illustrated in Figure VI.

FIGURE VI HERE

In this simulated organization, coordination is effected by allocating a portion of its resources to technical processes so that client movement

through the "treatments" is hastened or slowed according to the preceived discrepancy between the "treated population" and goals of the system. Changes in the "Staff Goal" I and II could destroy system stability. Thus, a modification of "Staff Goal" I could cause a shortage of clients available for Treatment II and, as a result, staff resources would be idle. This can be damaging to plans of the second staff unit and thereby produce competition and personnel problems.[29] In this case, coordination efforts include reallocation of resources so that the transition rate, Tl, can be increased and the short supply of clients for "Treatment II" alleviated. Another component of coordination would be actions to improve communication among decision makers in each technical unit. This produces a common view of the client treatment process and can lead to decision making directed by common goals, so that bottlenecks and shortages are reduced.

In school organization, resources available for coordination efforts constitute only a small portion of the total because substantial proportions are committed to employee contracts, on-going maintenance, and debt service. Control of the school as a client-treatment mechanism depends on the astute use of these limited resources and, hence, the importance of a decision-maker's model of the technical process and one's understanding of it.

In rare instances, the precise model of the technical process might be known. In that case, it is possible for computations to be made which show supply and demand relationships among units with reasonably accurate predictions of future states of the system. This is the case in some institutions of higher education wherein student flows are remarkably stable over time and, given precise information regarding the influx of new students, it is possible to compute resource demands well into the future. What happens in these

cases is that lower-level decision makers are given a precise model of the technical processes in the organization, and a picture of the input function, so that decisions might result primarily from known computations.

Altogether, by following our design model -- Figure IV -- it should be apparent how complex hierarchies of organization can be synthesized from these basic components. One could, for example, add additional "decision units" at higher levels in the organization. These units would monitor the ways lower level units respond to the performance measures they receive. This would amount to adding decision units to the schema of Figure IV, where each higher level unit based its action on a model of the next lower level unit which it attempts to control. In this way, the multi-level, multi-goal organizations described by Mesarović can be developed. As these hierarchies become more complex according to Mesarović, the following principles apply:

1) A higher level unit is concerned with a larger portion or broader aspects of the overall system's behavior.

2) The decision period of a higher level unit is longer than that of lower units.

3) A higher level unit is concerned with the slower aspects of the overall system's behavior.

4) Descriptions and problems at higher levels are less structured, with more uncertainties, and more difficult to formalize quantitatively.[30]

It should be noted that discretion must increase at lower levels of organization if appropriate responses are to be made to changing conditions in the environment. Conversely, long-range planning and broad changes in the goals of the organization are the prerogatives of upper levels of management. By means of this projected division of labor, the organization attends to its day-to-day needs as well as to the slower-paced changes in the external environment.

Discussion

The ground covered up to this point incorporates a considerable body of research and theory. It is difficult, and probably impossible, to summarize the inter-related contributions of each of the ideas depicted herein in a simple diagram or flowchart. If it were possible to develop a richer version of the control schema of Figure IV, and which would include the theoretical models of organization as well as decision making and process dynamics, we would have a visual representation of the paradigm we set out to illuminate at the outset. Such a diagram would probably confuse more than it would enlighten; consequently, we have chosen to set down the major contributions, questions, and methodologies in the following table.

TABLE I HERE

Table I identifies the major areas of inquiry addressed by organizational researchers and designers. These have to do with Organization Structure, Information and Decision Making, and Organization Process. For each of these areas, we show the basic theoretical references and the design problems which have to be attacked in any actual application. By consulting these works, one should have a comprehensive subject matter on which to base inquiry and organizational designs. The suggested methodologies are not referenced, but can be readily inferred from the suggested readings.

We have not presented a single paradigm of the human service organization, but a larger conceptual schema which enables the researcher and designer to link divergent paradigms in the body of organizational thought. Following Kuhn's conception of a "reigning paradigm", the table heretofore is a product

of ideas drawn from the thought of both "functional" and "nonfunctional" writers. Thus, similarities become discernable between the hierarchical structures proposed in the mathematical theory of hierarchical systems and the organizational structures proposed by Parsons as early as 1960.

As one consideres relationships between the technical and managerial levels, the nature of the interaction takes on new meaning through the concepts outlined in our discourse. Where Parsons indicates that certain "specifications" are set by management for technicians, it is clear from our analysis that these may vary from constraints on decision making to the input of specific information and/or resources which are intended to influence work at the technical level. It is also obvious that the societal goals which Parsons' organization incorporates through its institutional level are analogous to the goals of higher level "decision units" in our hierarchy.

The primary difference between this formulation of organizational behavior and that of earlier writers is in the link between theory and analysis made possible through modern computers. It is now possible to formulate models of organization structure and process of high complexity and carry out the computation to trace the dynamics of the resulting model of organization. If these models are build with care, in a piece-wise fashion, one might also have greater confidence in the results and, hence, predictions for design and management can flow from the application of theory to organization problems.

Conclusion

There is a consensus in the literature that principles of cybernetics in complex goal-directed organizations require the closed circuitry of

of a feedback loop.[34] Our model has attempted to depict the structural variables which account for this condition in the human service organization. Specialization, it was held, generates a centrifugal tendency within the organization in tandem with a centripetal tendency toward a greater interdependence of component units. Hence, just when fine-tuned coordination is critical, the tension between specialization and coordination creates a basic control problem.

Although both the theories proposed here and the computational methods referenced are very much in their infancy, they nonetheless point to a considerable potential for contributions from this line of investigation. Not only do we suggest that on-going human service organizations might be studied and modified to improve their dynamic behavior through the efforts of system design, but from such studies it is quite realistic to assume the derivation of certain structural principles which may be of considerable value to a subject matter of organization. By dealing with such a large set of behavioral determinants, following Bronfenbrenner, we are building the ecology of organization which is essential for any comprehensive view of the synthesis and control of complex human activity.[35]

זה של מחקר. אנו סבורים, שאפשר לחקור ולשנות ארגונים קיימים לשירות האדם לשם שיפור פעולתם הדינאמית על־ידי מאמץ לתכנון מערכת; אך יתר על כן, סביר למדי לצפות לכך, שמחקרים כאלה יביאו ליצירת עקרונות מבניים מסוימים, העשויים לתרום תרומות בעלות ערך לנושא הארגון. בטפלנו במערך כה רחב של גורמים התנהגותיים, הננו בונים בעקבות ברונפנברנר את אקולוגיית הארגון, שהיא חיונית לכל תפיסה מקיפה של הסינתזה של פעילות אנושי מורכבת ושל הפיקוח עליה[23].

הערות

1. Talcott Parsons, **Structure and Process in Modern Societies** (Glencoe, Ill.: Free Press, 1963), pp. 60—74.

2. בארגונים, לובשת תופעה זו צורה של צמצום במספר המשרות המינהליות מן השורה ושל הרחבת הצוות המקצועי, במיוחד בארגונים המשתמשים ברמות גבוהות של טכנולוגיית המחשבים. ראה Herbert A. Simon, **The New Science of Management Decision** (Englewood Cliffs, New Jersey: Prentice Hall, 1977); Thomas L. Whisler, **Information, Technology and Organizational Change** (Belmont, Clif: Wadsworth, 1970).

3. חדבר מתאמת במיוחד במינהלים המיבוריים, שהתמקחות קיבוצית גוברת והסכמי עבודה צמצמו בהם הרבה את חופש הפעולה של ההנהלה בענינים, הקשורים למנגנון ולתנאי עבודה. הגבלתה של פעולת ההנהלה, וכן פערי חזמן, הנגרמים על־ידי תהליכים מטרימים שזמנם הגיע מקטינים את יכולתם של אנשי המינהל לטפל בבעיות הארגון. כדוגמה להגבלות אלה בתחום החינוך, ראה Carnegie Commission on Higher Education, **Governance of Higher Education** (New York: The Commission, 1973).

4. Warren Bennis, 'Beyond Bureaucracy', **Trans-Action**, 2 (July-August, 1965).

5. זהו נושא, הרחוק בספרות הארגונית של ימינו. עם זאת, קיימת כמות ניכרת של ראיות סותרות, המביאות לידי מסקנה, שהחסתגלות ההדדית בין הפרט לבין הארגון קשורה במידה רבה לטכנולוגיה ולתנאי החעסקה במקרה ספציפי בספרו של Harry Braverman, **Labor and Monopoly Capital** (New York: Monthly Review Press, 1974), Robert P. Quinn and Linda J. Shepard, **The 1972—73 Quality of Employment Survey** (Ann Arbor: Survey Research Center, University of Michigan, 1974).

6. מובא מקרה כראיה, בעור שניתוח מקיף יותר של נתונים רומז על החיפך, למשל, אצל Ronald G. Corwin, 'Professional Persons in Public Organizatios', **Educational Administration Quarterly**, I (Autumn, 1965), p. 9.

7. Harold Guetzkow, 'Conversion Barriers in Using the Social Sciences', **Administrative Science Quarterly**, I (Autumn, 1965).

8. Hubert M. Blalock, Jr., **Theory Construction** (Englewood Cliffs, New Jersey: Prentice Hall, 1969), p. 142: Thomas Kuhn, **The Structure of Scientific Revolutions** (Chicago: University of Chicago press, 1962).

9. בעבודות על תכנון ארגוני שנכתבו לאחרונה, יש נסיונות לארגן את ספרות מדעי החברה לפי מטרות ספציפיות. ראה, למשל, Derek Newman, **Organization Design** (London: Edward Arnold, 1973); and Jay Galbraith, **Designing Complex Organization** (Reading, Mass.: Addison Wesley, 1973).

10. Chester I. Barnard, **The Function of the Executive** (Cambridge: Harvard University Press, 1971), p. 285.

11. הדוגמאות הטיפוסיות ביותר הן אמצעי התכנון של Tavistock Institute ופעילותם של חוקרי חברה אירופאיים נוספים בשינוי ארגונים לשם סיגולם לטכניקות ייצור חדשות. ראה Paul G. Herbst, Socio-Tecnnical Design (London: Tavistock, 1974).

12. James C. Emery, Organizational Planning and Control Systems (New York: Macmillan, 1969, p. 21.

13. M. D. Mesarovic, D. Macko, and Y. Takahara, Theory of Hierarchical, Multilevel Systems (New York: Academic Press, 1970), p. 24.

14. Persons, שם, עמ' 59.

15. Andrew M. Pettigrew, The Politics of Organizational Decision Making, (London: Tavistock, 1973).

16. James D. Thompson, Organizations in Action (New York: McGraw Hill, 1967). ראה פרספקטיבה אחרת על גורם מבני זה, כפי שבאה לידי ביטוי בארגון בתי־הספר, אצל E. Mark Hanson, The Modern Educational Bureaucracy and the Press of Change, Educational Administration Quarterly, II (Autumn, 1975).

17. Eric J. Miller (ed), Task and Organization (New York: J. Wiley, 1976). ראה, במיוחד,

18. המחברים פיקחו על כמה עבודות מחקר בנושא המבנה הכללי של ארגוני שירות לאדם ותגובותיהם לפיקוח. ראה, למשל, Robert Miller, 'Engineering Pacing in Individualized Instruction', Minneapolis, Minnesota: University of Minnesota, Department of Educational Administration, unpublished Ed. D. Thesis, 1972; and K. Scott Foster, 'Supply and Demand for School Teachers in Minnesota', Minneapolis Minnesota: University of Minnesota, Department of Educational Administration, unpublished Ph. D. Thesis, 1976.

19. החשובים ביותר בין חסידי עמדה זו הן פורסטר, מדוס ועמיתיהם. ראה Jay W. Forrester, Principles of Systems (Cambridge, Mass.: Wright Allen Press, 1968); D. L. Meadows and D. H. Meadows, Toward Global Equilibrium (Cambridge, Mass.: Wright Allen, 1974).

20. בין הביקורות הרבות שנמתחו על השימוש בדגמי תורת הפיקוח במחקר הארגוני והממשלתי, זו של ברלינסקי היא החריפה ביותר וגם, מבחינות מסוימות, המכוסת ביותר. ראה David Berlinski, On Systems Analysis (Cambridge, Mass.: M. I. T. Press, 1976).

21. בשל שלב ההתפתחות, שהתיאוריות האלה נתונות בו, הן כלליות מאוד. בכל זאת, מתברר, כי שיטת המחקר באמצעות פירוק הדמייה היא שיטה בסיסית לחקר מערכות במגוון ארגונים וטכנולוגיות. ראה את המתימטיקה המסובכת של התיאוריה הכללית, וכן כמה שימושים ספציפיים במערכות קיימות, אצל A. Wayne Wymore, A Mathematical Theory of Systems Engineering (New York: J. Wiley, 1967).

22. Charles Perrow, 'A Framework for the Comparative Analysis of Organizations', American Sociological Review, 32 (April, 1967), pp. 194—208. ראה, במיוחד,

23. אף על פי שדגם זה של החלטה ופיקוח, מקורו בתורת הפיקוח האוטומטי, הוא ניתן לשימוש רחב למדי בבעיות של תכנון ארגונים ושל ניהול מערכות חברתיות. ראה דיון בשימוש בדגם הזה אצל Frederic N. Bailey and Robert T. Holt, The Analysis of Complex Social Systems (Minneapolis, Minnesota: Center for Comparative Studies in Technological Development and Social Change, 1971).

24. A. Charnes and W. W. Cooper, Management Models and Industrial Applications of Linear Programming (New York: J. Wiley, 1967).

25. Peter C. Fishburn, Decision and Value Theory (New York: J. Wiley, 1964).

26. Joel Demski, Information Analysis (Reading, Mass.: Addison Wesley, 1972).

27. חניסוח המקורי של התיאוריה הכללית של אינפורמציה נמצא אצל מרשק. ראה Jacob Marschak, Economic Information, Decision and Prediction (Boston: Reidel, 1974).

28. Joseph Litterer, The Analysis of Organizations (New York: J. Wiley, 1965), ch. 14.

29. Robert Miller, שם

30. Mesarovic ועמיתיו שם, פרק II.

31. לחדגמת ספרות זו, ראה Karl E. Weick, **The Social Psychology of Organizing** (Reading, Mass. Addison Wesley, 1969).

32. Urie Bronfenbrenner, 'The Experimental Ecology of Education', **Educational Researcher**, 5 (October, 1976), p. 5.

FIGURE I

Basic Technical Unit
In Human Service
Organizations

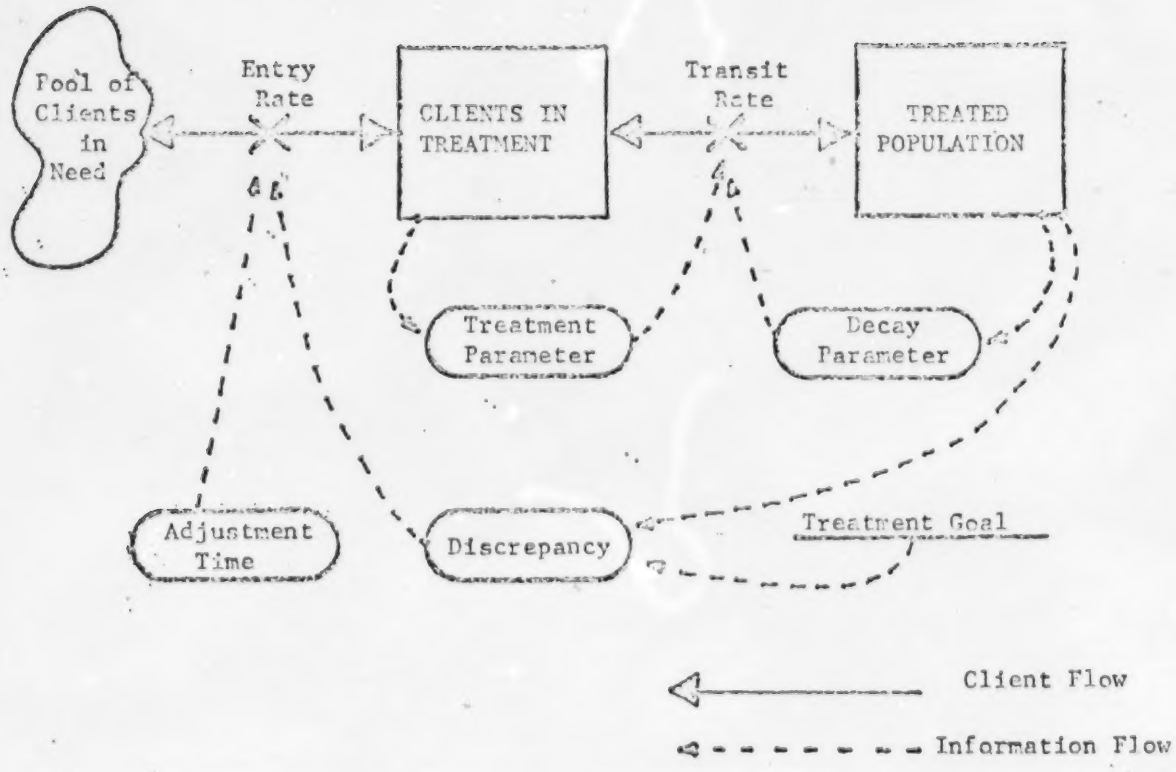

FIGURE II

Technical Unit
Response To
Goal Input

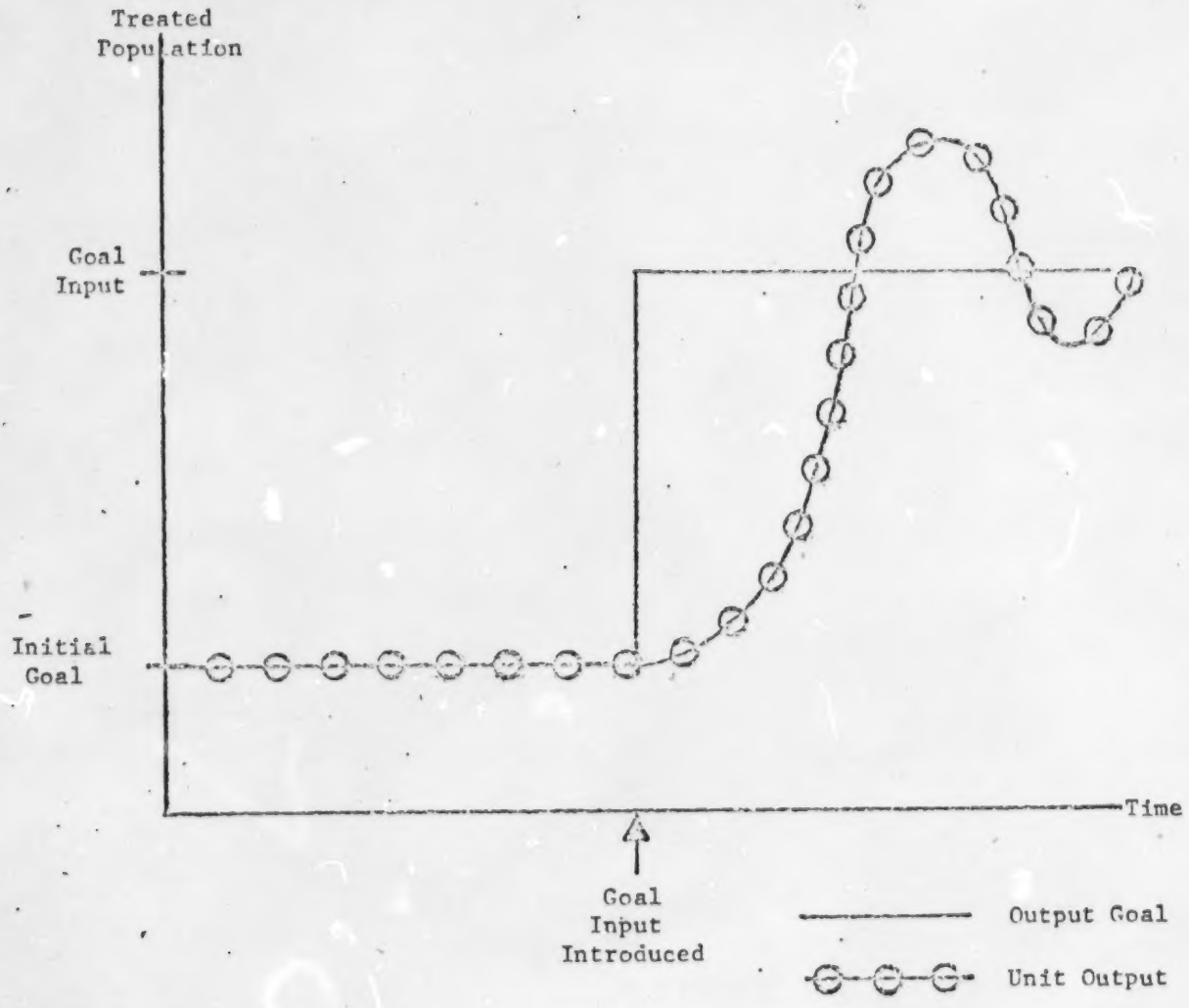

FIGURE III

Socio-Technical Systems
In Human Service Organizations

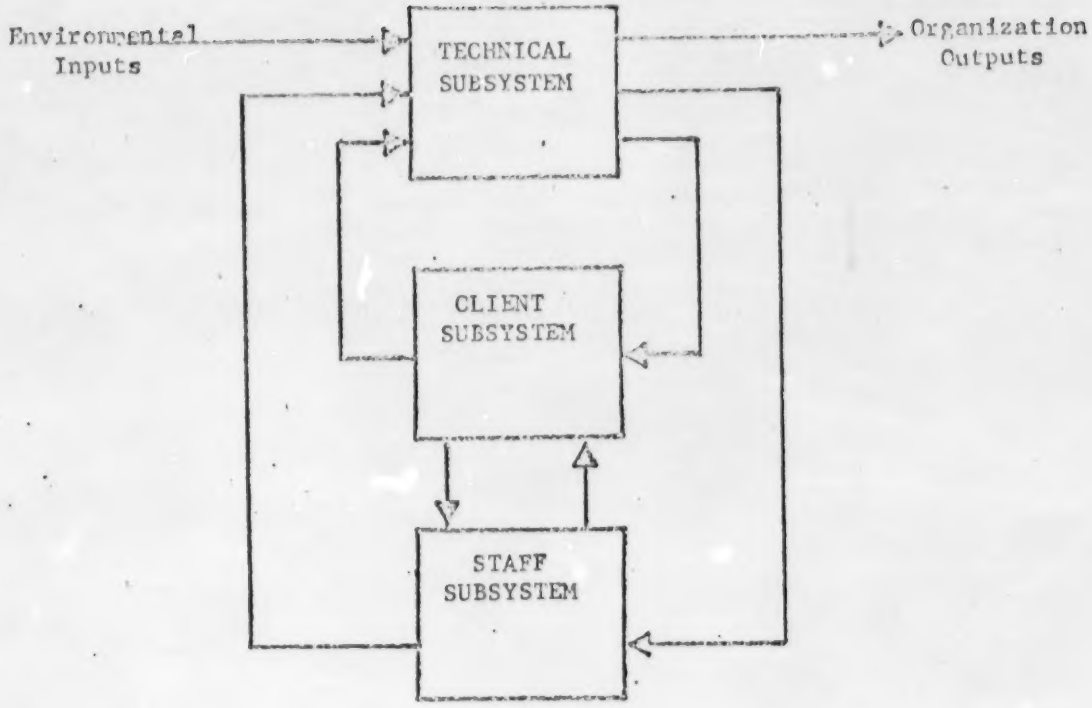

FIGURE IV

Decision Making
and Technical Process Control

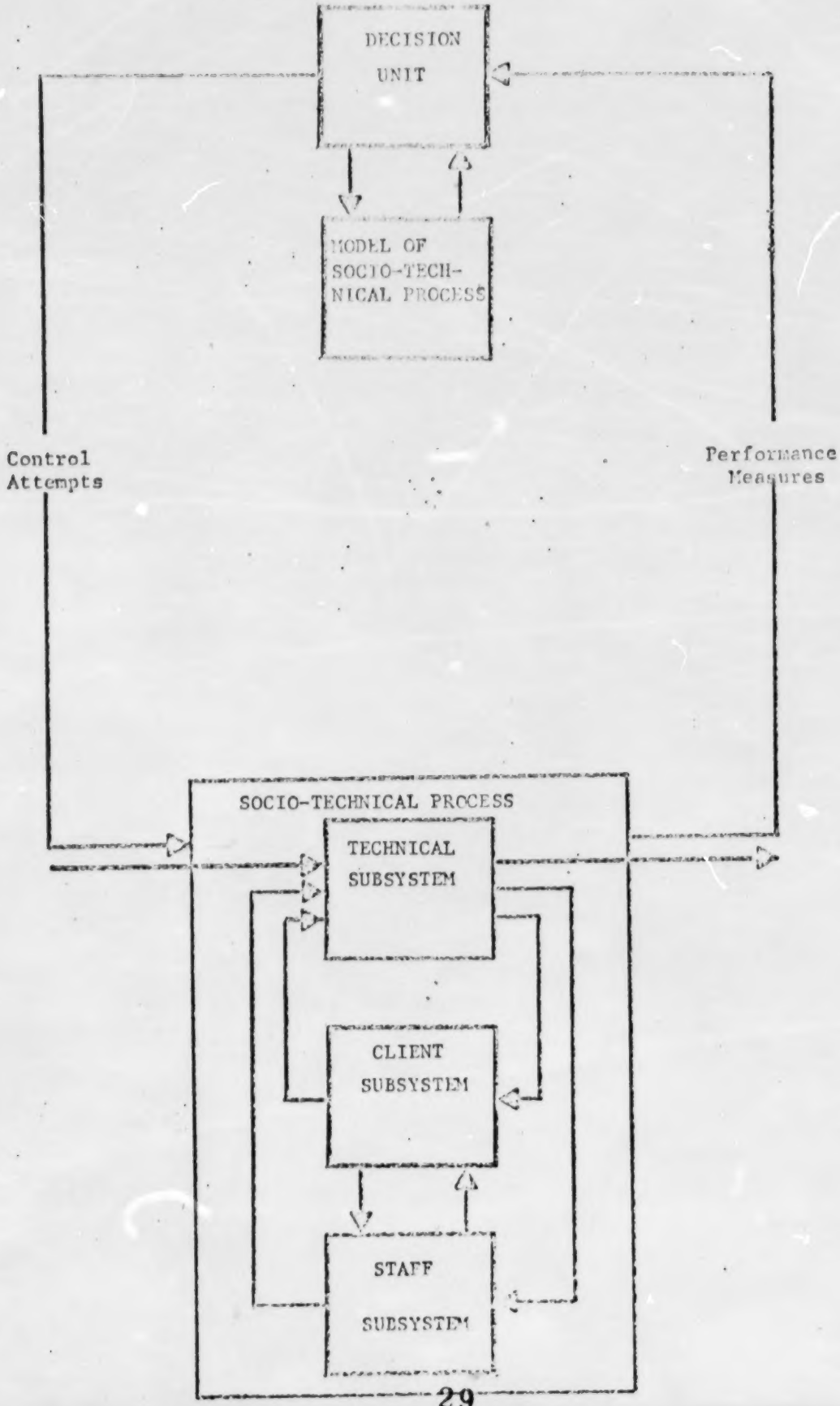

FIGURE V

General Format of
Decision Problems

		Condition of Controlled System						
		S_1	S_2	S_3	.	.	.	S_N
Decision Actions	A_1	O_{11}	O_{12}	O_{13}	.	.	.	O_{1N}
	A_2	O_{21}	O_{22}	O_{23}	.	.	.	O_{2N}
	A_3	O_{31}	O_{32}	O_{33}	.	.	.	O_{3N}
	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.
	A_M	O_{M1}	O_{M2}	O_{M3}	.	.	.	O_{MN}

FIGURE VI

A Two-Level Human Service Organization Hierarchy